SOUTH AUSTRALIA.

NOTES ON GEOLOGICAL MAP OF GUMERACHA AND MOUNT CRAWFORD GOLDFIELDS.

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NOTES ACCOMPANYING the GEOLOGICAL MAP of the EASTERN RESERVED PORTION of the HUNDRED of PARA WIRRA, known as the MOUNT CRAWFORD and GUMERACHA DIGGINGS, and RESERVED SECTIONS in the NORTH of TALUNGA, by HARRY P. WOODWARD, F.G.S., Assistant Government Geologist, under the direction of HENRY Y. L. BROWN, F.G.S., Government Geologist, South Australia.

These goldfields are situated about thirty miles north-east of Adelaide.

The area embraced by this map is most of the eastern portion of the hundred of Para Wirra, with a few sections in the north of the hundred of Talunga.

The whole of the country colored on the map is Crown lands, with the exception of Murray Vale, Hannaford's, and a few sections along the South Para river, which were taken up in the early days of the colony, and comprise all the land that is any good for agricultural purposes; the remainder being, as a rule, very little good, even for grazing purposes.

This area is bounded on the north by the South Para river, and on the south and east by the range of hills which form the water-parting between the Torrens and the Para river basins, and on the west by the private property in the valley of Malcolm's creek.

There are two distinct tracts of country divided by Murray Vale—that to the east is a large table-land, about 1,000ft. above sea-level, consisting of flats and swamps, with low hills, generally covered with dense honeysuckle scrub and grass trees; whilst that to the west is very rough, being a series of steep timbered ranges, with gullies running in deep channels, and frequently passing through gorges and over waterfalls.

The highest hill shown on this map (1,400ft.), at the head of Sailor's gully, is a peak in the north and south range, which is the continuation of the range from Mount Gould. To the west of this hill are several rough steep spurs, but none attain anything near the height of this hill.

The range that forms the boundary between the hundreds of Para Wirra, Talunga, and South Rhine is very low along the southern boundary until it nears the south-east corner, where it attains its greatest height at Gillmore's Hill (1,300ft.), after which it gradually decreases in height to the northwards. Mount Crawford is on the north bank of the South Para river, and is 1,358ft. above sea-level; it is an isolated hill, and very steep on the north side, where the gorge of the Para river separates it from the little mount (1,200ft.), which is at the north end of a ridge that runs north and south between Murray Vale and the large flats to the east.

The South Para river drains the whole of this area, and is always running below Mount Crawford, where it flows through a series of steep rocky gorges, sometimes 200ft. sheer down. There are few defined creeks to the east, and they spread out into large swampy flats and waterholes; they never run except after continuous heavy rain in the winter, but they store large quantities of water, which gradually finds its way through the sand into the river during the summer months; this, in a large measure, accounts for the constant flow of the river. The creeks to the west run generally in steep rocky channels, but are interspersed, here and there, with small grassy flats; like the creeks to the eastward, they never run except after heavy rain.

Geology.—In this, as in the other goldfields, we find comparatively new tertiaries lying directly on the old palæozoic and metamorphic rocks, which latter are here greatly broken and altered by numerous granite dykes.

Newer Gold Drifts.—The most recent formations here are the sand, clay, loam, and gravel of the gullies; of these, the sand is far the most abundant, particularly in the eastern portion; altogether, they have nowhere proved to be of any great thickness.

Small Cappings and Patches (Surfacing).—Between the boundaries of the older gold drift capping (made hills) and the newer drifts of the flats, the surface is generally strewn with debris of the former, often in such quantities that it is quite impossible to trace the boundaries of either; but the reefs and masses of rock which protrude in places intervening, show that these drifts cannot be of any thickness.

The Older Gold Drifts (Made Hills and Capping) are ferruginous conglomerates, sandstone, claystone (cement), sand, clay, gravel, &c.

These rocks cover a large area of this district, particularly in the eastern portion, where they form all the low hills, and flank the range on the south-east.

This formation appears to be the remains of what was a lake bed in tertiary times; levels, carefully taken, show that there was no outlet low enough to drain the central part until the present river gorge cut its way through.

The lake probably overflowed at the low saddle, towards Springton, and was fed by various tributaries, portions of the beds of which are still left, one of which comes down from the Blumberg cemetery; there are also two others, coming from a south-west direction.

Bed Rock.—Here, as in the other goldfields, we have called the bed-rock lower silurian, for the sake of uniformity with the other maps issued by this department, although, as in the other cases, no fossils are found which can determine its age.

The rocks are micaceous chloritic and clay slates, with beds of quartzite and schistose sandstone, with numerous quartz reefs; these are well exposed in the range on the south-eastern and eastern boundaries, and are apparently much broken and faulted, as great variation of strike is found, even in following them for a short distance.

There are three large beds of quartzose sandstone—one in the south-west corner (south of Dead Horse gully), one forming the main range from the Gumeracha diggings to the Para river, and one the range of which Little Mount Crawford is the highest peak.

The highly metamorphic rocks consist almost entirely of mica schist, with beds of quartzite, sandstone, and gneissic rock, with a general north-east dip, intersected by numerous quartz reefs and granite dykes.

These rocks occupy the whole of the north-west corner of the country shown on this map, from the Gumeracha-road to the Williamstown-road, and it is in this area that the goldfield is situated.

Dykes, Veins, &c.—The most prevalent strike of the dykes and veins is nearly north and south, but there appears also to have been a second dislocation nearly at right angles to the first one, and at a later period, which formed the east and west lodes and dykes.

One very strange thing about some of the veins is that they are sometimes a mixture of solid white quartz and granite, with sometimes a predominance of one, and sometimes of the other, so intermixed that they must either have been formed at the same time, or the granite, on cooling, must have left large cavities, probably filled with steam or gases, into which the silica subsequently found its way, in solution.

The granites are of a large crystalline character, often containing crystals of tourmaline; in a dyke on the north side side of the river, in Mr. Warren's property, beryls replace the tourmaline.

The quartz reefs mostly contain a large quantity of iron in the form of pyrites, from which it is most probable that the gold is derived.

There is an opal reef a little north of Hannaford's reef, and another to the north of Sailor's gully, but, up to the present time, no precious opal has been found in them, except on the private property belonging to Mr. Warren, but they would be worth prospecting. There is also a vein of serpentine, which follows the same course as the opal, near Sailor's gully. This may, in future, be of some value for carving; and it is in these veins that meerschaum occurs, although none has been found here yet.

GUMERACHA GOLDFIELD.

This goldfield was discovered by Mr. Watts and his mates about the beginning of 1884, and worked quietly for about a year; but somehow, at the beginning of 1885, it got wind that they were getting a good deal of gold; this started a few out to try it, and they published such glowing accounts of their prospect that the place was quickly rushed, and the original prospectors, from having the whole country, were confined to the ordinary-sized claims, and these not the best; as a compensation for which, they applied for and received £200 reward for the discovery of a new payable goldfield.

Watts' gully is a small gully on section No. 111, discharging itself into Dead Horse gully. Here the first goldfield was found, and it was by far the richest gully on the field; it was very rich to a little way above the fork near the top, and particularly rich just at it, where some large nuggets were obtained, which, as far as can be gathered, were not taken from the deepest gutter, but rather upon the western bank. Lately, some nice cemented nuggets were obtained on the opposite side, on a low point behind the blacksmith's shop; these had been so little rolled that they could not have travelled far from the reef. The specimens on this side differ considerably from those on the other side, which were generally largely intermixed with ironstone.

There was also a small steep gully on the western side, just below where the heavy gold was found, that was very rich.

The other alluvial workings will be seen by the map; they were all shortly after Watts', but were none of them more than patchy, and, taking them altogether, cannot be called payable diggings.

BLUMBERG DIGGINGS.

Another rich patch of alluvial digging was situated near the Blumberg cemetery. Here we have rather different conditions from the former. A deep lead formerly crossed the low saddle in these hills, of which a considerable portion still remains in the form of cappings; whilst, on the lower ground, the bed rock is covered by the surfacing, which has proved very rich, and is evidently derived from the denudation of the old lead; but on this latter no attempt has been made, except close to the cemetery.

Considering the richness of this surfacing, this lead should pay to work, and from its elevated position would be perfectly dry. The alluvium of the creeks also goes to prove the richness of this lead, as colors can be obtained throughout the whole depth of the sinking, accompanied with cement pebbles derived from the older gold drift, proving its virgin.

The great richness of Scott's and Hind's properties, on the adjoining sections, prove this to be, without doubt, a rich auriferous district; and if any two experienced diggers were selected, and put on wages, to prospect this deep ground, some good results might be expected.

QUARTZ REEFS.

The Gumeracha Gold Venture is situated in Dead Horse gully, on the south side, between Avenue and Snake gullies; it was found by Mr. Wallace, on Christmas, 1885. The reef strikes north 20° west, and dips west nearly vertically; it is as much as 6ft. wide in places from wall to wall, but it is not all one solid reef. There are two shafts—the one to the north is sunk 43ft. on the reef, but as it was unsafe another was started a little to the south, which is now down 37ft., and, as it is rather to the east of the reef, it has not struck it; but a small leader was struck at 15ft., from which prospects are said to have been obtained.

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The rock here is mica schist, striking north and south, dipping east 50°, and is very tough rock to work in, which, added to the large quantity of water in each shaft, makes it very unpleasant working. Rich prospects are said to have been obtained from this reef, and I have been shown specimens said to have come out of it, but was not allowed to touch the gold for fear it should come out of the stone. The intention was to sink 60ft., and drive to the reef to get out a crushing, but owing to some hitch the work has been suspended.

Philps' United is situated near the head of Watts' gully, on the eastern bank, and was started by Mr. Watts on New Year's Day, 1886. There are two shafts, with several costeens and pits. The first shaft, which is highest up the hill, was sank on a reef dipping to the west, which had been opened up to the east of the shaft; this reef was cut at 14ft. from the surface, where it was from 1ft. to 18in. in thickness. The shaft was then sank on to a depth of 52ft., and a drive put in at the bottom, 26ft., but nothing else was struck.

No. 2 shaft was sunk lower down the hill and cut a reef about 2ft. from the surface; on sinking further a second reef was cut (supposed to be the reef from No. 1 shaft) at a depth of 13ft., where it was 3ft. to 4ft, in width, striking south-west and north-east, dipping north-west 50°.

At 37ft. a floor was cut, striking north and south, dipping west 50°, which they are following down, as it is supposed to be the footwall of the lode; but this is not the case at present, as their strikes differ; though this reef, or a reef, may make on it, as it is clearly a faulted surface.

Here, as in other claims, we have only report for the richness of the stone; it would be far more satisfactory if the stone, already on the grass, were sent to a good battery and crushed.

It is a strange thing in this claim that the rock (which is mica schist) as well as the reefs should dip in the opposite disection to anything else in the neighborhood, and proves that there must have been great disturbances in this gully.

Watts' Gully, Kapunda Syndicate.—This consisted of some claims taken up on the western side of Watt's gully, near the fork, for the purpose of finding the reef from which the heavy gold had been derived, which at this time had only been found along this edge of the gully and round the point of the little steep branch gully that comes down this western bank.

The work was started by fossicking amongst the blows of quartz with which the ridge is capped, but as nothing in the form of gold was found a tunnel was started about half way down the hill to test its internal structure, and was driven 173ft. through mica schist, with segregations of quartz, dipping to the east. but no reef was struck. Here the work was suspended, and a casual observer might wonder it had been carried on so long, or why the cheaper course of cutting a costeen trench had not been adopted instead of this, which was barely 50ft. below the surface after driving 173ft. The great pity is that persons who showed such persistence in supporting this work had not some of the good claims that have been closed, just for want of capital to work them.

The Gumeracha Syndicate.—This claim is situated across Watts' gully, just by the fork, and covers all the ground where the heaviest gold was found. It is being tested by a tunnel on the eastern bank of Watts' gully, just above the fork, which has been driven 86ft. through mica schist dipping to the east where they cut the reef. One of the strange things about this tunnel is, that several large blows of quartz have been opened on the surface, but though the tunnel has passed close under them there was no sign of a reef in the ground passed through until the reef was struck as 86ft., though several small veins and segregated masses were struck. There is also a shaft sunk to a depth of 60ft. in mica schist up the eastern branch gully; no reef of any size was struck, but two small leaders containing mundic were passed through. This shaft, although sunk with the right idea of cutting the reef that supplied the gully with gold, was sunk too far up, and though it might strike it in depth, there is very little prospect of getting gold, as it is generally so patchy, and runs in shoots, which, the chances are, would be some way out of the line in the 1,000ft. which this shaft would have to go down. This claim might be cheaply tested by trenching from the low point just below the fork, on the east side (where the blacksmith's shop stood), a little above where the heavy gold was found, to the western side of the creek, and about twenty yards up that bank, testing everything like a veinstone, as there must be gold in stone on this claim.

Hutchinson's Claim.—This claim is situated on a low ridge between Watts' and Snake gullies, just below the fork in Watts' Gully.

There is a small reef, striking south-west and north-east, dipping west, with a good deal of mundic in it, from which some very fair prospects were obtained at the surface. A shaft was sunk 40ft. in the mica schist, to the west of the reef, but went through at 15ft; it was carried on in the hope that the reef would turn and dip in an easterly direction, as there seems to be a general opinion amongst the diggers that it is no good following a westerly reef.

There have also been two or three small holes and trenches; but the claim is now abandoned

The Adelaide Syndicate.—These claims join Hutchinson's claim on the western side, and follow down Watts' gully, taking both banks, and some way up the hills on either side; of these, the northern one is about the only one on which much work has been done; on this, the first shaft is just on the eastern bank of the gully; it was sunk just into the solid ground when a drive was put under the gully, with the idea of cutting any reef that might carry gold, as one of the diggers said he had a reef with gold in the bottom of his shaft.

The idea of this was good enough, but the drive ought to have been carried on further, also in an opposite direction; but it would have been better if it had been done as high up the gully as the claim would allow, so as to be nearer to where the heavy gold was found.

The next shaft was over 80ft., sunk on the top of the hill by the side of Hutchinson's shaft, with the idea of cutting his reef at its junction with a well-defined reef, a little west of the shaft, that is dipping in an easterly direction. These reefs have evidently pinched, as nothing but two very small leaders were cut in the shaft, at the bottom of which they have now started to drive in a westerly direction towards the gully, it is difficult to understand why.

The Kapunda Syndicate is situated at the head of Blood and Thunder gully, where a shaft is being sunk, beween it and Kerosine gully, with the idea of cutting a reef that has supplied the gold to both of these gullies. There have been several trenches put in the hill without finding any defined reef, athough there is a good deal of quartz scattered about, which most probably comes from one of those large segregations so common in this mica schist country. It would have been far better to have tried further down the gully, near where the gold was found than going quite away from it upon this hill.

Avenue Gully.—On the west side of this gully are three or four old shafts, one of which is timbered, and is about 50ft. deep, but most of the timber has rotted and begun to fall in, and the rest have also partly fallen in. There are two reefs, one a solid white quartz, whilst the other is ferruginous quartz and gossan; they strike north and south, and dip 70° or 80° west; the rock is mica schist. There has been a good deal of work done, but it was so long ago that it is difficult to get any reliable information respecting it.

Hannaford's Reef.—This reef is situated on the southern boundary of this reserve, and it is a large reef running in a north-easterly direction, dipping to the west. A great deal of work has been done on it, but in a somewhat curious manner, as there seem to be a series of shafts, as close as they can be, from one end of the outcrop to the other, besides numerous pits and trenches. From this reef it is said that a large number of very rich specimens were obtained, but what the reef was like seems very uncertain.

There are some old shafts on section No. 8, Talunga, two of which are timbered and seem to be a good depth, but are full of water to about 30ft. from the surface.

The reef strikes east and west dipping north, and several holes and trenches have been opened on its cap. Up to the present time no auriferous reef has been found in Watts' gully, this, added to the character of the gold, leads me to adhere to my original opinion at the first opening of the gully, that the gold would be carried in a network of small veins (leaders) rather than in a large reef; further, the difference in the character of the gold on the two sides of the gully led me to infer that there are two sources, one either side of the gully. The leaders on the eastern side would be composed of a little quartz with ferruginous earthy cemen (very similar to the Young Australian No. 3 claim, in the Humbug Scrub, which was a mass of leaders about 16ft. wide), and would probably be found on the low spur behind the blacksmith's shop, under or a little above where the heavy gold was found; and this might be very simply proved by trenching, as the work the diggers have already done could be utilised. On the western side the leaders would most probably contain iron, and might appear to entirely consist of this metal; this side might be prospected in a similar manner to the other, bearing in mind that stone from every vein laid bare, however small, must be tried, as, from the quantity of gold found in this gully, it ought to be rich enough to work, however small.

It appear to be a strange thing that the diggers do not think it of any importance that a reef should carry gold at the surface, and generally pick a reef on a hill that is too far from a gold-bearing gully for it to be the possible source from whence the gold in the gully was derived. Now the gold in the gully has been derived from that part of a reef, or reefs, that have been crushed and washed in nature's battery, which is represented by the wearing away action of the creek, with the subsequent rolling and grinding together of the boulders, and final sorting by the water of the creek, which leaves the heavier minerals near their source, carrying the finer and lighter portions often great distances. The part of the reef worn away, and from which the gold has been derived, has naturally been where the present valley is, therefore we should look in the low ground, even under the alluvium, but a little above where the heavy gold was found, for the part of the reef which joined the rich portion that has been denuded; and the chances are that, if the gully had been at all rich, we ought not to have much trouble in finding the continuation of this shoot.

The next thing after finding a reef carrying gold is to keep on it; the best way to do this is to sink an underlay, until the dip of the shoot is determined, trying the stone all the way, so as to be sure that it does not run away to the right or left. The other advantage in this form of sinking is, that stone is being raised the whole time, which can be crushed, and the mine tested without doing any superfluous work. The practice of sinking a vertical shaft to test the reef, in what is called by diggers "settled country," has generally proved to be just so much waste of money; firstly, because of the shoot having run away to one side, as a rule, no gold-bearing stone is struck; secondly, the shaft is too small to work the mine on a large scale.

The country to the eastward should be prospected, as well as the few sections in Talunga.

There is gold in this part of the country, as prospectors have, in most places, obtained colors; and although they were not fortunate enough to strike a patch, I am firmly convinced that it will be found at some future time.

HARRY P. WOODWARD, Assist. Govt. Geologist

Adelaide, January 10th, 1886.

PLAN

Geological Map

OF THE

EASTERN RESERVED PORTION OF THE HUNDRED OF

PARA WIRRA,

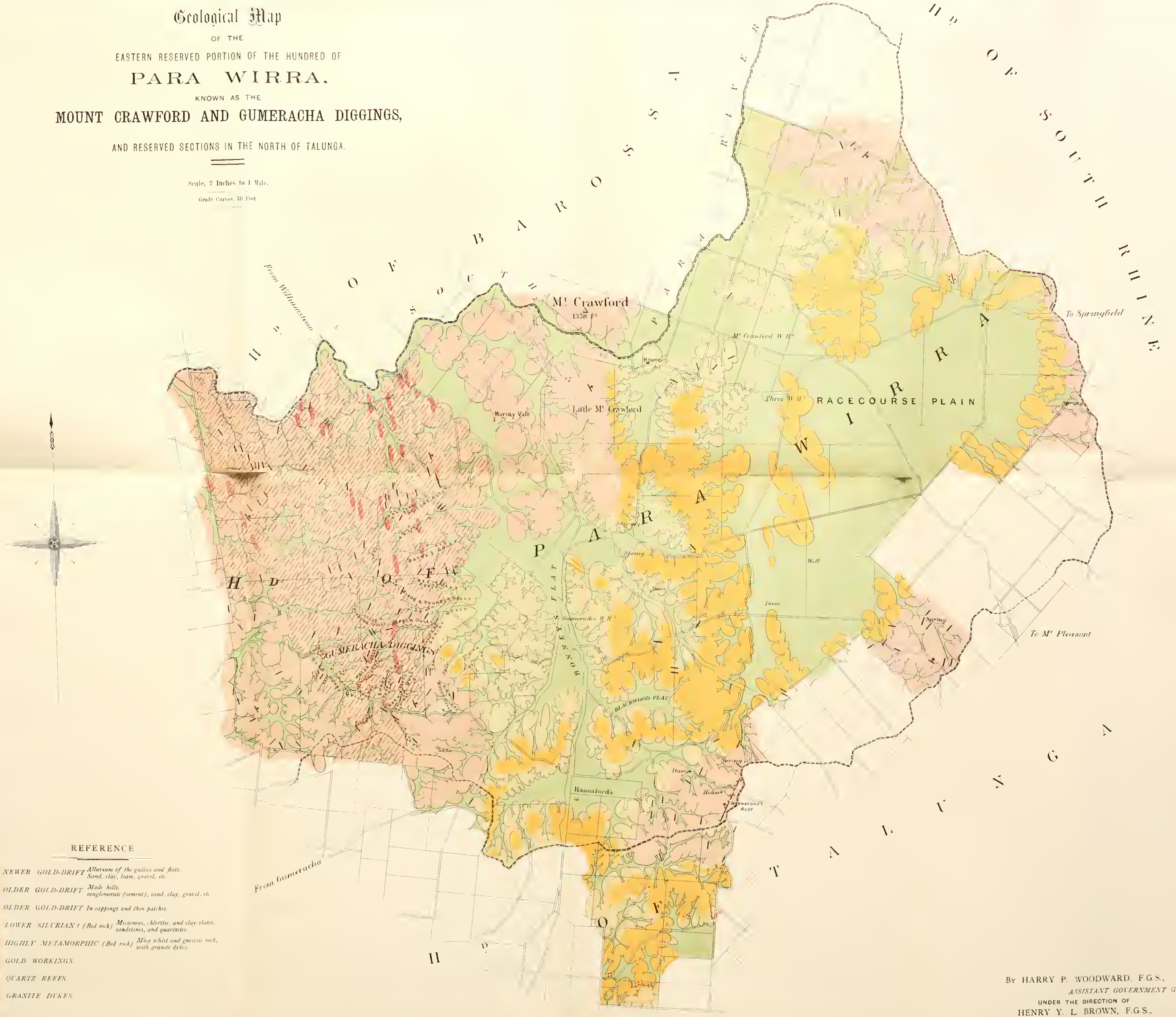
KNOWN AS THE

MOUNT CRAWFORD AND GUMERACHA DIGGINGS,

AND RESERVED SECTIONS IN THE NORTH OF TALUNGA.

Scale, 2 Inches to 1 Mile.

Grade Curves, 50 Feet.



REFERENCE

🟩	*NEWER GOLD-DRIFT*	*Alluvium of the gullies and flats. Sand, clay, loam, gravel, etc.*
🟨	*OLDER GOLD-DRIFT*	*Made hills. conglomerate (cement), sand, clay, gravel, etc*
☐	*OLDER GOLD-DRIFT*	*In cappings and thin patches.*
🟥	*LOWER SILURIAN ? (Bed rock)*	*Micaceous, chloritic, and clay slates, sandstones, and quartzites.*
▨	*HIGHLY METAMORPHIC (Bed rock)*	*Mica schist and gneissic rock, with granite dykes.*
▨	*GOLD WORKINGS.*	
▨	*QUARTZ REEFS*	
▨	*GRANITE DYKES.*	

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